



**State of Louisiana  
Department of Natural Resources  
Coastal Restoration Division**

**2006/2007 Annual Inspection  
Report**

for

**Bayou Sauvage Refuge Restoration  
Phase I  
(PO-16)**

State Project Number PO-16  
Priority Project List 1

July 18, 2007  
Orleans Parish

Prepared by:

Barry Richard, E.I.  
Peter Hopkins, P.E.  
LDNR/CED  
New Orleans Field Office  
CERM, Suit 309  
2045 Lakeshore Dr.  
New Orleans, La 70122

## **Table of Contents**

I. Introduction.....	1
II. Inspection Purpose and Procedures .....	1
III. Project Description and History.....	1
IV. Summary of Past Operation and Maintenance Projects.....	2
V. Inspection Results .....	2
VI. Conclusions and Recommendations .....	2

## **Appendices**

Appendix A	Project Features Map
Appendix B	Photographs
Appendix C	Three Year Budget Projections
Appendix D	Field Inspection Form

## **I. Introduction**

The Bayou Sauvage Refuge Restoration Phase I Project (PO-16) is located in eastern Orleans Parish approximately 10 miles northeast of Chalmette, LA (Appendix A). It is bordered by U.S. Highway 90 to the north, the Lake Pontchartrain Hurricane Protection Levee to the east and south, and the Maxent Canal levee to the west. The project area includes approximately 3,800 acres of fresh marsh.

## **II. Inspection Purpose and Procedures**

The purpose of the annual inspection of the Bayou Sauvage Refuge Restoration Phase I Project (PO-16) is to evaluate the constructed project features to identify any deficiencies and prepare a report detailing the condition of project features and recommended corrective actions needed. Should it be determined that corrective actions are needed, LDNR shall provide, in the report, a detailed cost estimate for engineering, design, supervision, inspection, and construction contingencies, and an assessment of the urgency of such repairs (O&M Plan September 2, 2004). The annual inspection report also contains a summary of maintenance projects and an estimated projected budget for the upcoming three (3) years for operation, maintenance and rehabilitation. The three (3) year projected operation and maintenance budget is shown in Appendix C. A summary of past operation and maintenance projects completed since completion of the project are outlined in Section II.

An inspection of the Bayou Sauvage Refuge Restoration Phase I Project (PO-16) was held on March 15, 2007 by representatives of LDNR George Boddie, Barry Richard, Peter Hopkins, and Pon Dixon of USFWS. The tidal gauge at the Bayou Sauvage Refuge boat launch read – 0.1 ft-NAVD. Photographs of that inspection are included in Appendix B of this report.

## **III. Project Description and History**

The project is divided into two units (North Unit and South Unit) which are hydrologically separated by a railroad embankment. A 30-inch diameter (22,000 GPM) water pump was installed in each unit, with each pump having the capability to remove water from the unit.

The project's purpose is to regulate water levels in the marshes of both units throughout the year by pumping excess water from the management areas. Such management during the fall and winter, enhances emergent fresh marsh habitats in the project area for wintering waterfowl. Annually, the water level is intended to be controlled to the range of 0.0 feet to - 0.5 feet below marsh elevation during the spring and summer and to within 0.0 feet to + 0.5 feet above marsh elevation during the fall and winter. The water level control schedule is also intended to preserve black willow habitat in order to maintain wading bird rookeries.

Project Features:

1. Pump Station, CTU Unit No. 5
  - a. Elevated pump platform with roof and access walkway
  - b. 30-inch-diameter Patterson single stage axial flow vertical drainage pump, with 36-inch diameter discharge, 22,000GPM capacity, with engine, right-angle gear drives, drive shafts, drive shaft guards, fuel and lubrication lines, intake sump, supports and connections.
  - c. Fuel tank
  - d. One 36-inch diameter, smooth-steel discharge pipelines (1 per pump), concrete pipe supports, and plunge pools.
2. Pump Station, CTU Unit No. 6
  - a. Elevated pump platform with roof and access walkway
  - b. 30-inch-diameter Patterson single stage axial flow vertical drainage pump, with 36-inch diameter discharge, 22,000GPM capacity, with engine, right-angle gear drives, drive shafts, drive shaft guards, fuel and lubrication lines, intake sump, supports and connections.
  - c. Fuel tank
  - d. One 36-inch diameter, smooth-steel discharge pipelines (1 per pump), concrete pipe supports, and plunge pools.
3. One weir. The weir hydrologically separates CTU Unit No. 5 from CTU Unit No. 6

#### **IV. Summary of Past Operation and Maintenance Projects**

**Operations:** USFWS has operated the pumps but has not provided details of operations. This information has been requested from USFWS.

**General Maintenance:** USFWS has repaired the storm damage but has not provided cost or other details. This information has been requested from USFWS.

#### **V. Inspection Results**

**Pump #5**

USFWS has replaced the pump and it is fully operational.

**Pump #6**

Pump #6 was inaccessible due to road and levee damage from the Hurricane. USFWS has replaced the pump and reports that it is fully operational.

## **VI. Conclusions and Recommendations**

There is no need for additional repairs at this time.

### **Immediate Repairs**

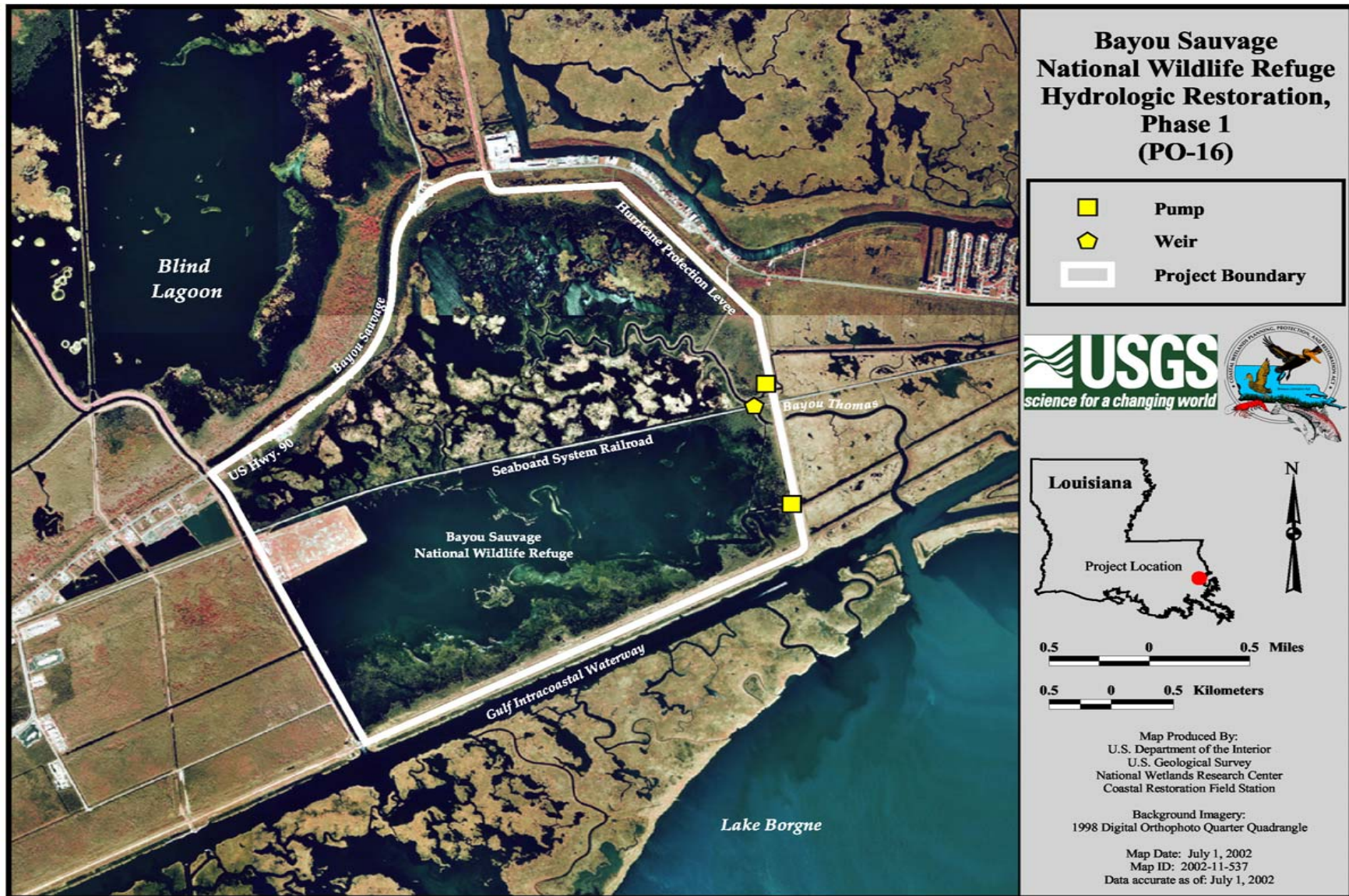
- None at this time.

### **Programmed Maintenance**

- Periodically check pump stations for any maintenance needs.

## **Appendix A**

### **Project Features Map**



## **Appendix B**

### **Photographs**





**Photo #1 – CTU #5.** New pump engine.



**Photo #2 – CTU #5.** Marsh beyond pump suction basin.



**Photo #3 – CTU #5.** Bar screen with railroad embankment and floodgate in background.



**Photo #4 – CTU #5.** Pump discharge pipe crossing under levee.



**Photo #5 – Near CTU #5.** Lake Pontchartrain water inlet valves. Not a project feature.



**Photo #6 – Near CTU #5.** Lake Pontchartrain water inlet valves crossing through levee. Not a project feature.



## **Appendix C**

### **Three Year Budget Projection**

Annual Inspection Report  
 Bayou Sauvage Refuge Restoration Phase I  
 State Project No. PO-16

Bayou Sauvage Refuge Restoration Phase I / PO-16 / PPL 1  
**Three-Year Operations & Maintenance Budgets 07/01/2007 - 06/30/2010**

=

<u>Project Manager</u> Barry Richard	<u>O &amp; M Manager</u> Barry Richard	<u>Federal Sponsor</u> FWS	<u>Prepared By</u> Peter Hopkins
---	---	-------------------------------	-------------------------------------

	2007/2008	2008/2009	2009/2010
Maintenance Inspection	\$3,426.00	\$3,517.00	\$3,609.00
General Maintenance	\$0.00	\$0.00	\$0.00
Structure Operation	\$14,305.00	\$14,677.00	\$15,058.00
Administration	\$0.00	\$0.00	\$0.00
Maintenance/Rehabilitation			

07/08 Description:

E&D	\$0.00
Construction	\$0.00
Construction Oversight	\$0.00
Sub Total - Maint. And Rehab.	\$ -

08/09 Description

E&D	\$0.00
Construction	\$0.00
Construction Oversight	\$0.00
Sub Total - Maint. And Rehab.	\$ -

09/10 Description:

E&D	\$0.00
Construction	\$0.00
Construction Oversight	\$0.00
Sub Total - Maint. And Rehab.	\$ -

	2007/2008	2008/2009	2009/2010
<b>Total O&amp;M Budgets</b>	<b>\$ 17,731.00</b>	<b>\$ 18,194.00</b>	<b>\$ 18,667.00</b>

<b>O &amp; M Budget (3 yr Total)</b>	<b>\$ 54,592.00</b>
<b>Unexpended O &amp; M Budget</b>	<b>\$ 170,257.76</b>
<b>Remaining O &amp; M Budget (Projected)</b>	<b>\$ 115,665.76</b>

Annual Inspection Report  
 Bayou Sauvage Refuge Restoration Phase I  
 State Project No. PO-16

**OPERATION AND MAINTENANCE BUDGET WORKSHEET 2007/2008**

Bayou Sauvage Refuge Restoration Phase I / PO-16 / PPL 1

DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
O&M Inspection and Report	EACH	1	\$3,426.00	\$3,426.00
General Structure Maintenance	LUMP	1	\$0.00	\$0.00
Engineering and Design	LUMP	1	\$0.00	\$0.00
Operations	LUMP	1	\$14,305.00	\$14,305.00
Construction Oversight	LUMP	1	\$0.00	\$0.00
<b>ADMINISTRATION</b>				
LDNR / CRD Admin.	LUMP	0	\$0.00	\$0.00
FEDERAL SPONSER Admin.	LUMP	0	\$0.00	\$0.00
SURVEY Admin.	LUMP	0	\$0.00	\$0.00
OTHER				\$0.00
TOTAL ADMINISTRATION COSTS:				\$0.00

**MAINTENANCE / CONSTRUCTION**

**SURVEY**

SURVEY DESCRIPTION:				
Secondary Monument	EACH	0	\$0.00	\$0.00
Staff Gauge / Recorders	EACH	0	\$0.00	\$0.00
Marsh Elevation / Topography	LUMP	0	\$0.00	\$0.00
TBM Installation	EACH	0	\$0.00	\$0.00
OTHER				\$0.00
TOTAL SURVEY COSTS:				\$0.00

**GEOTECHNICAL**

GEOTECH DESCRIPTION:				
Borings	EACH	0	\$0.00	\$0.00
OTHER				\$0.00
TOTAL GEOTECHNICAL COSTS:				\$0.00

**CONSTRUCTION**

CONSTRUCTION DESCRIPTION:					
Rip Rap	LIN FT	TON / FT	TONS	UNIT PRICE	
	0	0.0	0	\$0.00	\$0.00
	0	0.0	0	\$0.00	\$0.00
	0	0.0	0	\$0.00	\$0.00
Filter Cloth / Geogrid Fabric	SQ YD	0		\$0.00	\$0.00
Navigation Aid	EACH	0		\$0.00	\$0.00
Signage	EACH	0		\$0.00	\$0.00
General Excavation / Fill	CU YD	0		\$0.00	\$0.00
Dredging	CU YD	0		\$0.00	\$0.00
Sheet Piles (Lin Ft or Sq Yds)		0		\$0.00	\$0.00
Timber Piles (each or lump sum)		0		\$0.00	\$0.00
Timber Members (each or lump sum)		0		\$0.00	\$0.00
Hardware	LUMP	1		\$0.00	\$0.00
Materials	LUMP	1		\$0.00	\$0.00
Mob / Demob	LUMP	1		\$0.00	\$0.00
Contingency	LUMP	1		\$0.00	\$0.00
General Structure Maintenance	LUMP	1		\$0.00	\$0.00
OTHER				\$0.00	\$0.00
OTHER				\$0.00	\$0.00
OTHER				\$0.00	\$0.00
TOTAL CONSTRUCTION COSTS:					\$0.00

**TOTAL OPERATIONS AND MAINTENANCE BUDGET: \$17,731.00**

Annual Inspection Report  
 Bayou Sauvage Refuge Restoration Phase I  
 State Project No. PO-16

**OPERATION AND MAINTENANCE BUDGET WORKSHEET 2008/2009**

Bayou Sauvage Refuge Restoration Phase I / PO-16 / PPL 1

DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
O&M Inspection and Report	EACH	1	\$3,517.00	\$3,517.00
General Structure Maintenance	LUMP	1	\$0.00	\$0.00
Engineering and Design	LUMP	1	\$0.00	\$0.00
Operations	LUMP	1	\$14,677.00	\$14,677.00
Construction Oversight	LUMP	1	\$0.00	\$0.00
<b>ADMINISTRATION</b>				
LDNR / CRD Admin.	LUMP	0	\$0.00	\$0.00
FEDERAL SPONSER Admin.	LUMP	0	\$0.00	\$0.00
SURVEY Admin.	LUMP	0	\$0.00	\$0.00
OTHER				\$0.00
TOTAL ADMINISTRATION COSTS:				\$0.00

**MAINTENANCE / CONSTRUCTION**

**SURVEY**

SURVEY DESCRIPTION:				
Secondary Monument	EACH	0	\$0.00	\$0.00
Staff Gauge / Recorders	EACH	0	\$0.00	\$0.00
Marsh Elevation / Topography	LUMP	0	\$0.00	\$0.00
TBM Installation	EACH	0	\$0.00	\$0.00
OTHER				\$0.00
TOTAL SURVEY COSTS:				\$0.00

**GEOTECHNICAL**

GEOTECH DESCRIPTION:				
Borings	EACH	0	\$0.00	\$0.00
OTHER				\$0.00
TOTAL GEOTECHNICAL COSTS:				\$0.00

**CONSTRUCTION**

CONSTRUCTION DESCRIPTION:					
Rip Rap	LIN FT	TON / FT	TONS	UNIT PRICE	
	0	0.0	0	\$0.00	\$0.00
	0	0.0	0	\$0.00	\$0.00
	0	0.0	0	\$0.00	\$0.00
Filter Cloth / Geogrid Fabric	SQ YD	0		\$0.00	\$0.00
Navigation Aid	EACH	0		\$0.00	\$0.00
Signage	EACH	0		\$0.00	\$0.00
General Excavation / Fill	CU YD	0		\$0.00	\$0.00
Dredging	CU YD	0		\$0.00	\$0.00
Sheet Piles (Lin Ft or Sq Yds)		0		\$0.00	\$0.00
Timber Piles (each or lump sum)		0		\$0.00	\$0.00
Timber Members (each or lump sum)		0		\$0.00	\$0.00
Hardware	LUMP	1		\$0.00	\$0.00
Materials	LUMP	1		\$0.00	\$0.00
Mob / Demob	LUMP	1		\$0.00	\$0.00
Contingency	LUMP	1		\$0.00	\$0.00
General Structure Maintenance	LUMP	1		\$0.00	\$0.00
OTHER				\$0.00	\$0.00
OTHER				\$0.00	\$0.00
OTHER				\$0.00	\$0.00
TOTAL CONSTRUCTION COSTS:					\$0.00

**TOTAL OPERATIONS AND MAINTENANCE BUDGET: \$18,194.00**

Annual Inspection Report  
 Bayou Sauvage Refuge Restoration Phase I  
 State Project No. PO-16

**OPERATION AND MAINTENANCE BUDGET WORKSHEET 2009/2010**

Bayou Sauvage Refuge Restoration Phase I / PO-16 / PPL 1

DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
O&M Inspection and Report	EACH	1	\$3,609.00	\$3,609.00
General Structure Maintenance	LUMP	1	\$0.00	\$0.00
Engineering and Design	LUMP	1	\$0.00	\$0.00
Operations	LUMP	1	\$15,058.00	\$15,058.00
Construction Oversight	LUMP	1	\$0.00	\$0.00
<b>ADMINISTRATION</b>				
LDNR / CRD Admin.	LUMP	0	\$0.00	\$0.00
FEDERAL SPONSER Admin.	LUMP	0	\$0.00	\$0.00
SURVEY Admin.	LUMP	0	\$0.00	\$0.00
OTHER				\$0.00
TOTAL ADMINISTRATION COSTS:				\$0.00

**MAINTENANCE / CONSTRUCTION**

**SURVEY**

SURVEY DESCRIPTION:				
Secondary Monument	EACH	0	\$0.00	\$0.00
Staff Gauge / Recorders	EACH	0	\$0.00	\$0.00
Marsh Elevation / Topography	LUMP	0	\$0.00	\$0.00
TBM Installation	EACH	0	\$0.00	\$0.00
OTHER				\$0.00
TOTAL SURVEY COSTS:				\$0.00

**GEOTECHNICAL**

GEOTECH DESCRIPTION:				
Borings	EACH	0	\$0.00	\$0.00
OTHER				\$0.00
TOTAL GEOTECHNICAL COSTS:				\$0.00

**CONSTRUCTION**

CONSTRUCTION DESCRIPTION:					
Rip Rap	LIN FT	TON / FT	TONS	UNIT PRICE	
	0	0.0	0	\$0.00	\$0.00
	0	0.0	0	\$0.00	\$0.00
	0	0.0	0	\$0.00	\$0.00
Filter Cloth / Geogrid Fabric	SQ YD	0	\$0.00	\$0.00	\$0.00
Navigation Aid	EACH	0	\$0.00	\$0.00	\$0.00
Signage	EACH	0	\$0.00	\$0.00	\$0.00
General Excavation / Fill	CU YD	0	\$0.00	\$0.00	\$0.00
Dredging	CU YD	0	\$0.00	\$0.00	\$0.00
Sheet Piles (Lin Ft or Sq Yds)		0	\$0.00	\$0.00	\$0.00
Timber Piles (each or lump sum)		0	\$0.00	\$0.00	\$0.00
Timber Members (each or lump sum)		0	\$0.00	\$0.00	\$0.00
Hardware	LUMP	1	\$0.00	\$0.00	\$0.00
Materials	LUMP	1	\$0.00	\$0.00	\$0.00
Mob / Demob	LUMP	1	\$0.00	\$0.00	\$0.00
Contingency	LUMP	1	\$0.00	\$0.00	\$0.00
General Structure Maintenance	LUMP	1	\$0.00	\$0.00	\$0.00
OTHER			\$0.00	\$0.00	\$0.00
OTHER			\$0.00	\$0.00	\$0.00
OTHER			\$0.00	\$0.00	\$0.00
TOTAL CONSTRUCTION COSTS:					\$0.00

**TOTAL OPERATIONS AND MAINTENANCE BUDGET: \$18,667.00**



## **Appendix D**

### **Field Inspection Form**

Annual Inspection Report  
 Bayou Sauvage Refuge Restoration Phase I  
 State Project No. PO-16

**FIELD INSPECTION CHECK SHEET**

Project No. / Name: Bayou Sauvage Refuge - Phase 1 (PO-16)

Date of Inspection: 15-Mar-07 Time: \_\_\_\_\_

Structure No. CTU No. 5

Inspector(s): LDNR: Richard, Boddie, Hopkins

Structure Description: Pump Platform

USFWS: Dixon

Water Level: Normal Outside: Normal

Type of Inspection: Annual

Weather Conditions: Partly cloudy, mild

Item	Condition	Physical Damage	Corrosion	Photo #	Observations and Remarks
Platform	Good	None	Light	N/A	
Trash rack	Appeared good but inspected from a distance	Not inspected closely	Not inspected closely	3	
Fuel Tank	Fair	None	Some		
Pump Drive Engine	Good	None	Light	1	
Pump Gear Box	Good	None	N/A		
Piping	Good	None	None observed	4	Some pipe is exposed
Lake Pont. Inlet System	Good	None	None observed	5 & 6	

Annual Inspection Report  
 Bayou Sauvage Refuge Restoration Phase I  
 State Project No. PO-16

**FIELD INSPECTION CHECK SHEET**

Project No. / Name: PO-16 Bayou Sauvage Refuge

Date of Inspection: 15-Mar-07 Time: 9:30 AM

Structure No. CTU 6

Inspector(s): LDNR: Richard, Boddie, Hopkins

Structure Description: Pump Station

USFWS: Dixon

Water Level: Normal Outside: Normal

Type of Inspection: Annual

Weather Conditions: Partly cloudy, mild

Item	Condition	Physical Damage	Corrosion	Photo #	Observations and Remarks
Pump Platform	N/A	N/A	N/A	N/A	Pump Station inaccessible due to Hurricane damage.
Trash Rack	N/A	N/A	N/A	N/A	Pump Station inaccessible due to Hurricane damage.
Fuel tank	N/A	N/A	N/A	N/A	Pump Station inaccessible due to Hurricane damage.
Pump Drive Engine	N/A	N/A	N/A	N/A	Pump Station inaccessible due to Hurricane damage.
Pump gear box	N/A	N/A	N/A	N/A	Pump Station inaccessible due to Hurricane damage.
Piping	N/A	N/A	N/A	N/A	Pump Station inaccessible due to Hurricane damage.